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Expanded EPACT Program

An Update

January 15, 2008

Base EPA Act Program Design

- Tier 2 fuel effects (RVP, T50, T90, Aromatics, EtOH)
- “RFS 2 Pilot” to precede main program
 - Three additional, in-use E0, E10, E15 fuels tested in all 19 vehicles at 75°F and 50°F
 - RFS 2 testing from early April till end of June, 2008
- 16 fuels, 19 vehicles in main program
- Estimated cost (Dec. 20, 2007): Non-responsive
vs. previous EPA estimate of Non-responsive
 - Discussions underway with SWRI to reduce program cost
- Base Program Timeline, w/o safety margin
 - Jan. 2008 – March 2008: Fuel blending, vehicle recruiting
 - April 2008 – December 2008: Emissions testing
 - December 2008 – February 2009: Reporting
- The Base Program is already moving forward
- Lubrizol has committed to provide lubricant support for this program

Expanded EPAAct Program

- Met with NREL in Ann Arbor on January 9 to discuss the design of the Expanded EPAAct Program
- NREL has been authorized by DOE to plan for an up to \$2.0M expansion of EPAAct Program
 - \$0.9M has been made available to NREL from DOE's Biomass Program for use in expanding the EPAAct Study
 - NREL has already received a funding letter from DOE for this amount
 - Additional \$1.1M is expected to become available shortly from DOE's Vehicle Technology Program
 - Funding letter expected in March
- NREL will sign sole source contracts with SWRI to cover expansion of the EPAAct Program
- Expanded fuel matrix includes 29 fuels
- 22 vehicles used in Phases 1 & 2, 19 vehicles in Phase 3
- DOE would also like to fund limited PM speciation work
- Lubrizol has committed to provide lubricant

Expanded Fuel Matrix

	Fuel #	T50	T90	ETOH	RVP	ARO
		°F	°F	%	psi	%
Base Program (1-16)	1	235	300	10	7	15
	2	235	350	0	9	15
	3	195	350	10	9	15
	4	195	350	0	7	40
	5	195	300	10	7	40
	6	235	300	0	7	40
	7	215	350	10	7	15
	8	215	300	10	9	15
	9	215	350	0	9	40
	10	215	300	0	7	15
	11	215	300	10	9	40
	12	215	350	10	7	40
	13	195	350	0	7	15
	14	195	300	0	9	15
	15	235	350	10	9	40
	16	195	300	0	9	40
RFS 2 Subset (17- 19)	17	215	325	0	9	30
	18	202	325	10	9	25
	19	195	325	15	9	23
DOE Fuels (20-29)	20	160	300	20	7	15
	21	168	300	15	7	15
	22	160	350	20	7	40
	23	160	300	20	9	40
	24	160	350	20	9	15
	25	195	300	15	7	15
	26	168	350	15	9	40
	27	195	350	15	9	40
	28	160	350	20	9	40
E85	29	TBD	TBD	85	TBD	TBD

Timeline

Phase	# of Tests	# of Weeks	Duration	
			From	To
Fuel blending	-	22	2-Jan	31-May
Phase 1 (75°F)	135	5	1-Apr	6-May
50°F Switchover	-	2	7-May	20-May
Phase 2 (50°F)	135	7.5	21-May	11-Jul
Phase 3 (75°F)	1243	46	14-Jul	29-May-09
Reporting	-	12	1-Jun-09	31-Aug-09

No margin of
safety

Program Cost

Base EPAAct Program (19 fuels, 19 vehicles)

Phase	# of Fuels	# of Vehicles	# of Emission Tests	Cost per Test	Total Cost
1	3	19	117	Ex. 4 - CBI	
2	3	19	117		
3	16	19	623		
857					

Expanded EPAAct Program (29 fuels, 19 + 3 vehicles)

Phase	# of Fuels	# of Vehicles	# of Emission Tests	Cost per Test, \$	Total Cost, \$
1	3	22	135	Ex. 4 - CBI	
2	3	22	135		
3	25+E85	19	982		
1252					

Note: Calculations assume 2.05 replicates per each fuel/vehicle combination

- Both cost estimates based on SWRI proposal received on Dec. 20
- Some costs will go up, e.g. test fuel blending
- Program cost negotiations with SWRI are in progress
- Cost reduction of Base EPAAct Program by **Ex. 4 - CBI** is likely

Most Pressing Issues

- Make sure EPAAct Program is launched and completed on time
 - Alert SWRI management to the needs of EPAAct Program
 - Jeff White; Director; Light-Duty and Unregulated Emissions Section?
 - Nigel Gale; Vice President; Engine, Emissions and Vehicle Research?
 - Alert Haltermann (fuel supplier) management to the needs of EPAAct Program
 - Wayne Peterson, Commercial Director
 - If blending of fuels 17-19 is not accelerated in Haltermann's work schedule, Phase 1 testing will not start on April 1, 2008
 - E15 T50 issue must be resolved ASAP
 - Meet w/Wayne Peterson of Haltermann in Ann Arbor the wk of January 28 to drive home the message
 - Finalize the design of the expanded EPAAct Program in collaboration with NREL
- Complete cost negotiations with SWRI and approve their proposal

Back-up Slides

Test Program Design

- Design similar to Base EPA Act Program
 - Phase 1: RFS 2 Pilot at 75°F
 - 3 fuels (E0, E10, E15) as in base program
 - 19 vehicles as in base program + 3 high emitter/mileage vehicles
 - Phase 2: RFS 2 Pilot at 50°F
 - 3 fuels (E0, E10, E15) as in base program
 - 19 vehicles as in base program + 3 high emitter/mileage vehicles
 - Phase 3: Main Program
 - 26 fuels
 - 16 fuels as in base program + 9 additional fuels + E85
 - 19 vehicles as in base program
 - Same parameters measured as in base program
 - Exception: Limited PM speciation in Phases 1 and 2